Data Aggregation in Laboratory Medicine

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The current ability to assess the performance of hospital laboratories is constrained by data collection mechanisms. Traditional questionnaire solicitation of responses is both laborious and expensive thereby limiting the timeliness and usefulness of these data. We are establishing an electronic Laboratory Medicine Sentinel Monitoring Network as an alternative to current methodology. The goal of this network is to gather and aggregate data on a continual, proactive basis for the purpose of addressing quality assurance questions in this important area of medicine. This project is somewhat unique in that it involves a coalition of government (CDC), industry (Cerner) and academia (UAB) working together toward a common goal.

Several barriers must be overcome in a successful attempt to aggregate data from disparate sites. The complexity is compounded by the diversity of laboratory computer systems which include multiple commercial vendors and unique in-house-systems. Therefore, we choose first to select a small number of questions and establish the data elements required to satisfy the query at UAB which is a Cerner PathNet site. This was followed by extending the same queries to several other PathNet sites which varied by size and geographic location. Since PathNet allows great flexibility in the naming of fields this approximated a sampling of a variety of different vendors.

The initial questions we addressed were 1) antibiotic resistance in bacteria, e.g., *Streptococcus pneumoniae*. 2) turn-around-times (TAT) for tests and 3) the frequency of panic values and their related TAT. We adopted Health Level 7 (HL7) as the standard for transmitting these data and adapted the Unsolicited Transmission of an Observation (ORU) transaction for our purpose. Use of this transaction for Quality Assurance information required the definition of several new coded elements for turnaround time, the expansion of an organism code table to one that will allow universal identification, and the adaptation of the laboratory result record format recommended by HL7 for panic value reporting. We will describe our success in using these tools on data from various PathNet systems.

The ORU transaction also appears suitable for the automatic reporting of Reportable Result information from laboratory computer systems to State and Territorial Public Health Laboratories. We will also describe how the current HL7 Patient Identification and Patient Visit transaction can help in providing this information in a more complete and timely fashion for Reportable Results such as organism identification, emerging drug resistant organisms and blood lead levels.

Use of a standard transaction set and coding tables greatly enhances our ability to transmit understandable data between disparate sites and a central data repository. Having data stored in a common format will allow a timely assessment of the quality of laboratory medicine.

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